

Applicant's or agent's file reference 215171/142	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416).
International Application No. CT/NZ2002/000130	International Filing Date (day/month/year) 24 July 2002	Priority Date (day/month/year) 24 July 2002
International Patent Classification (IPC) or national classification and IPC Int. Cl. ⁷ G02F 1/1335		
Applicant UNISYS CORPORATION et al		

This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

This REPORT consists of a total of 3 sheets, including this cover sheet.

- ☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 2 sheet(s).

This report contains indications relating to the following items:

- | | | |
|------|-------------------------------------|---|
| I | <input checked="" type="checkbox"/> | Basis of the report |
| II | <input type="checkbox"/> | Priority |
| III | <input type="checkbox"/> | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| IV | <input type="checkbox"/> | Lack of unity of invention |
| V | <input checked="" type="checkbox"/> | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| VI | <input type="checkbox"/> | Certain documents cited |
| VII | <input type="checkbox"/> | Certain defects in the international application |
| VIII | <input type="checkbox"/> | Certain observations on the international application |

Date of submission of the demand 23 February 2004	Date of completion of the report 29 OCT 2004
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Basis of the report

With regard to the elements of the international application:*

- ☐ the international application as originally filed.
- ☒ the description, pages 1-10, as originally filed,
pages , filed with the demand,
pages , received on with the letter of
- ☒ the claims, pages , as originally filed,
pages , as amended (together with any statement) under Article 19,
pages , filed with the demand,
pages 11,12, received on 21 December 2004 with the letter of 21 December 2004
- ☒ the drawings, pages 1-11, as originally filed,
pages , filed with the demand,
pages , received on with the letter of
- ☐ the sequence listing part of the description:
pages , as originally filed
pages , filed with the demand
pages , received on with the letter of

With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/fig.

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report

7. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**Statement**

Novelty (N)	Claims 1-12	YES
	Claims	NO
Inventive step (IS)	Claims 1-12	YES
	Claims	NO
Industrial applicability (IA)	Claims 1-12	YES
	Claims	NO

8. Citations and explanations (Rule 70.7)

The prior art listed in the search report does not disclose an imaging screen having an array of light sensitive pixels in combination with an optical layer comprising an array of light guides as specified in claims 1-11. The invention of claims 1-11 is considered novel and inventive over the prior art cited in the search report. Similarly, the invention of claim 12 does not appear to be disclosed or suggested by the prior art.

Claims

1. An optical layer having an array of light guides, each light guide having a first end and a second end, the first ends being arranged in a first lattice pattern, and the second ends being arranged in a second lattice pattern.
2. An optical layer according to claim 1 wherein the light guides have light reflecting walls.
3. An optical layer according to any one of the preceding claims wherein the first or second lattice pattern is a hexagonal lattice pattern.
4. An optical layer according to claim 3 wherein one of the lattice patterns is a hexagonal lattice pattern and the other lattice pattern is a rectangular lattice pattern.
5. An optical layer according to any of the preceding claims wherein the first end of each light guide has a first shape, and the second end of each light guide has a second shape.
6. An optical layer according to claim 5 wherein the first or second shape is substantially hexagonal.
7. An optical layer according to claim 6 wherein one of the shapes is substantially hexagonal and the other shape is substantially rectangular.
8. A display screen including an array of pixel devices arranged in a first lattice pattern; and an optical layer having an array of light guides, each light guide having a input end and an output end, the output ends being arranged in a second lattice pattern, and the input ends being arranged in the first lattice pattern and directed towards the pixel

devices whereby the light guides guide light from the pixel devices from their input ends to their output ends.

9. A display screen according to claim 8 wherein the light guides have
5 light reflecting walls which each guide light from a respective pixel device.
10. A display screen according to claim 8 or 9 wherein the first or second
10 lattice pattern is a hexagonal lattice pattern.
11. A display screen according to claim 10 wherein one of the lattice
patterns is a hexagonal lattice pattern and the other lattice pattern is a
rectangular lattice pattern.
12. A display screen according to any of claims 8 to 11 wherein the first
15 end of each light guide has a first shape, and the second end of each
light guide has a second shape.
13. An optical layer according to claim 12 wherein the first or second
20 shape is substantially hexagonal.
14. A display screen according to claim 13 wherein one of the shapes is
substantially hexagonal and the other shape is substantially
25 rectangular.
15. A display screen according to any of claims 8 to 14 wherein the
optical layer physically engages the pixel devices.
16. A display screen according to any of claims 8 to 15 wherein the pixel
30 devices are liquid crystal devices.

17. A display device having a screen according to any of claims 8 to 16;
and a screen drive for driving the pixel devices in accordance with a
set of image data.
- 5 18. A display device according to claim 17 including a resampler
programmed to: receive image data in a format compatible with the
first lattice pattern, resample the image data into a format compatible
with the second lattice pattern, and output the resampled image data
to the screen drive.
- 10 19. A display device according to claim 17 or 18 further comprising means
for manipulating the image data.
20. A display device according to any one of claims 17 to 19, wherein the
15 device is hand-held and portable.
21. An imaging screen having an array of light sensitive pixel devices
arranged in a first lattice pattern; and an optical layer having an array
of light guides, each light guide having a input end and an output end,
20 the input ends being arranged in a second lattice pattern, and the
output ends being arranged in the first lattice pattern and directed
towards the pixel devices whereby the light guides guide light from
their input ends to their output ends and onto the pixel devices.
- 25 22. An imaging screen according to claim 21 wherein the light guides have
light reflecting walls which each guide light towards a respective pixel
device.
23. An imaging screen according to claim 21 or 22 wherein the first or
30 second lattice pattern is a hexagonal lattice pattern.

24. An imaging screen according to claim 23 wherein one of the lattice patterns is a hexagonal lattice pattern and the other lattice pattern is a rectangular lattice pattern.
- 5 25. An imaging screen according to any of claims 21 to 24 wherein the first end of each light guide has a first shape, and the second end of each light guide has a second shape.
- 10 26. An imaging screen according to claim 25 wherein the first or second shape is substantially hexagonal.
- 15 27. An imaging screen according to claim 26 wherein one of the shapes is substantially hexagonal and the other shape is substantially rectangular.
28. An imaging screen according to any of claims 21 to 27 wherein the optical layer physically engages the pixel devices.
- 20 29. An imaging device having a screen according to any of claims 21 to 28; and an output interface for receiving image data from the light sensitive pixel devices.
- 25 30. An imaging device according to claim 29 having a resampler programmed to: receive the image data from the output interface, resample the image data into a format compatible with a different lattice pattern, and output the resampled image data.
- 30 31. An imaging device according to claim 30, wherein the device is handheld and portable.
32. A display device for generating a pixellated image, the device having an array of pixel devices for generating the pixellated image, wherein each pixel in the image partially overlaps with at least one other pixel.

33. A display device according to claim 32 including a light source,
wherein the pixel devices modulate light from the light source.
- 5 34. A device according to claim 32 or 33 wherein the pixel devices are
non-overlapping, and pixel overlap is provided by projecting light from
the pixel devices onto a display surface such that the light partially
overlaps at the display surface.
- 10 35. A device according to any of claims 32 to 34 further including an array
of lenses, each lens receiving light from a respective one of the pixel
devices.
- 15 36. A display device according to claim 32 or 33 wherein the pixel devices
are partially overlapping.
37. A display device according to any of claims 32 to 36, wherein the
pixel devices are arranged in a hexagonal lattice pattern.